The Hyatt Bearing

A RESUME OF ITS

Advantages and Applications

Hyatt Roller Bearing Company

Harrison, New Jersey

BULLETIN TWENTY-EIGHT JANUARY TENTH, NINETEEN-SIX

BULLETIN TWENTY-EIGHT JANUARY TENTH, NINETEEN SIX

A BRIEF MECHANICAL STATEMENT OF FACTS

Explaining the Commercial Supremacy
of the

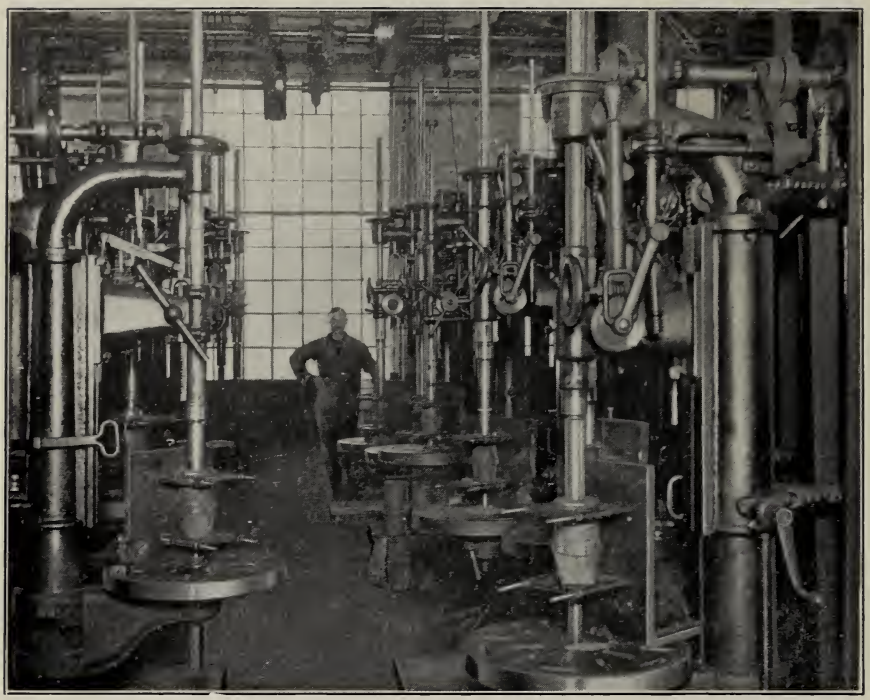
HYATT ROLLER BEARING

as well as a short treatment on its
Principal Applications

Concluding
with a list of four hundred prominent users

HYATT ROLLER BEARING COMPANY
HARRISON, NEW JERSEY

BRANCH OFFICES IN ALL PRINCIPAL CITIES



View in Machine Shop Number One
Boring Small Shafting Boxes

THE MECHANICAL ADVANTAGES OF THE HYATT BEARING

The status of the friction reducing, or what we might term rotative bearing, from an economical standpoint, is at the present time universally acknowledged, and can no longer be omitted by the progressive engineer or manufacturer in the design or purchase of any article requiring in its operation the expenditure of either power or labor.

In considering the particular type of bearing to be adopted, care should be taken to examine fully the advantages or disadvantages of the various designs, especially as regards the durability, efficiency and practicability of each ; in fact, a thorough study of the mechanical features involved will be of value and will enable the designer, or purchaser, to decide for himself that type of bearing best suited to his particular needs. In looking into the subject we find in general four distinct types. THE CONVENTIONAL TYPE OF BALL BEARING, THE BALL BEARING LACKING PRINCIPAL CONVENTIONAL FEATURES, THE SOLID ROLLER BEARING and THE FLEXIBLE ROLLER BEARING.

After we have examined into the merits or shortcomings as the case may be of these various types, we will present a SUMMARY of the conclusions arrived at as well as an enumeration of the principal INHERENT FEATURES of the Flexible or Hyatt Bearing.

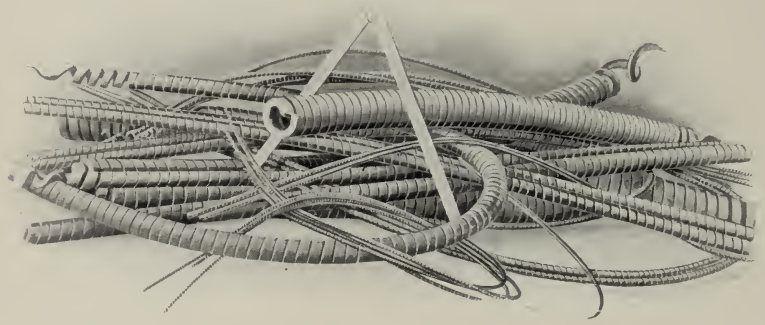
Arguments are often used which are most easily explained by an examination into the facts brought out by the following discussion. We therefore will present for your consideration a few FACTS AND THE REASONS WHY. We also urge your careful consideration of the paragraph entitled, FALLACIES AND THE REASONS WHY as unscrupulous statements are often made which are flatly contradicted by a mere superficial observation of the principles involved.

In the following discussion, we will endeavor to comment equitably upon all points with a view of assisting you to determine upon that design which is of the greatest all-around practicability as judged by commercial requirements.

The Conventional Type of Ball Bearing

Academically, the Ball Bearing offers the most perfect mechanical or we may say geometrical method of meeting and carrying stresses of various directions, and yet no known practical form of Ball Bearing actually provides equally well for all directions of probable stress thereon.

Balls have been successfully used in bicycles, sewing machines and numerous other constructions, and are highly to be recommended where the duty is light, and where the factor of safety is so ample as to protect the short-comings of design.



Hyatt Flexible Rollers.

In any Ball Bearing the fact remains that the load must necessarily be carried upon a limited number of points of contact, and as we reach those classes of machinery where the saving of power is of great moment it has been found in practice that the academically designed bearing will not support the load without distorting the balls or ball races. The results obtained by the conventional type of ball bearing presenting short radii of cone and case amply bears out this assertion.

The Ball Bearing Lacking Principal Conventional Features

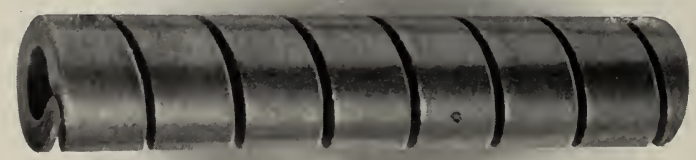
Within recent years the Ball Bearing has to the casual observer again come into favor by the introduction of a German form of Ball Bearing in which the great academic advantages are conspicuously lacking. This bearing owes its success to workmanship rather than to superiority of performance or design. The latter is based upon the most primative textbook form of bearing suitable for plain rolling contact, and single plane of load. The former insures that the deformity of the bearing surface of the ball should be within the elastic limit of the material. It is true that this form of bearing is made of the very best material, accurately machined and beautifully finished but the very fact of the necessity of ultra liberal dimensions and the most expensive workmanship will, owing to its cost, place it without the reach of commercial utility. Though it retains the name "Ball Bearing" it has lost all resemblance to its other namesakes in so for as resembling the original academic ball bearing is concerned. In fact it has no advantages over that other great class of anti-friction bearings known as Parallel Roller Bearings. In common with these it has to be supplemented with devices such as thrust washers, to provide for stresses from those directions unprovided for in the bearings themselves. It will thus be seen that with this form of bearing it has been found necessary in order to provide a bearing that will successfully carry the load upon a limited number of points of contact, not only to relinquish the original purposes of the adjustable Ball Bearing, but to so increase the expense of workmanship as to render the cost of this form of bearing vastly in excess of that class of bearing designed upon the principle of line contact instead of point contact.

The Solid Roller Bearing

It will be seen, therefore, that the logical step is to change our construction so as to substitute for the limited number of points of contact in the ball, a line of contact made possible by a roller. We find that more than four hundred patents have been issued in the United States for roller bearings, and with a single exception each one involves the use in some form of a solid steel roller. A description, therefore, of the mechanical features involving such a roller will prac-

tically include all designs, the Hyatt excepted, for the latter, as we have already stated, presents for your consideration an entirely different principle.

The solid roller on account of the rigidity, apparent from its construction, cannot in its practical operation in a bearing present contact along its entire length. It is impossible, therefore, to secure a uniform distribution of load, either on the face of the roller, on the axle or shaft, causing distortion and gradual destruction of the roller, as well as the surfaces on which and in which it operates. The irregularities causing this lack of contact and inequality of pressure may be caused in various ways, such as slight deflections of the shaft, yielding of supports, or imperfections in the manufacture, or mounting of the bearing. Such irregularities cannot be eliminated, and are sure to be present in practical work, no matter what the conditions may be, and have a tendency to increase in such applications in which practice will not permit the bearings to receive great care, or where the work may be more or less crude. Such in general are the conditions under which the solid steel roller operates and make it necessary not only to harden the roller, but to provide all surfaces on which and in which it runs with hardened and ground steel sleeves, all of which has a tendency to complicate the construction as well as increase the cost; at the same time reducing, not eliminating the objectionable features.



The Hyatt Flexible Roller.

We see, therefore, that with the roller we have increased the number of points of contact by which the load is distributed, but on the other hand we have not secured a line of contact on the maximum number of points as expected

on account of the imperfections that are always present and the rigidity of the roller that we have adopted. It follows therefore, that if some method could be suggested whereby perfect contact and uniform distribution of load was effected along the entire length of the roller as well as the surfaces on which it operates, we would have made still further progress, and would have obtained far better results.

The Flexible Roller Bearing

The distinctive feature of the Hyatt Flexible Roller Bearing is the roller, which is made from a strip of steel wound into a coil or spring of uniform diameter. The greatest advantage of a roller of this construction lies in its flexibility, enabling it to present at all times a bearing along its entire length, resulting in a uniform distribution of load on the roller itself, as well as the surfaces on which and in which it operates. All tendency, therefore, to distortion of these surfaces is entirly eliminated, for the roller will adjust itself to all irregularities that may be present, there being no necessity for hardening the various parts of the bearing, any soft steel surface satisfactorily answering all requirments. It will also be seen from its construction that the roller essentially acts as an oil reservoir, while the spiral and roller together perform the function of an oil carrier, thereby assuring perfect lubrication of all parts at all times, making it possible to operate the bearing for considerable interval without attention. By varying the diameter of the roller as well as the thickness, width and character of stock from which it is made, it is possible to so vary its nature as to enable it to operate under the most varied conditions, from the heaviest load on one hand to the highest speed on the other.

Summary

From the above examination of the various designs and constructions of anti-friction bearings, it should be plain that the Hyatt Bearing having as a foundation the flexible roller possesses the features that we have found most essential in the anti-friction device, namely the fullest extent of contact with the most uniform distribution of load. Our conclusions are further justified by facts when the extent of the use of the Hyatt Bearing in machinery of the most varied description is fully conceived and appreciated.

The conventional form of Ball Bearing has failed to prove up under severe conditions the advantages which are theoretically its own. The latest type of single action Ball Bearing by reason of its cost, is in most cases commercially ineligible. The ordinary solid Roller Bearing because of its inability to present a line of contact and on account of its absolute rigidity makes it a bearing of limited duration and therefore of little value in good machine designs, while the expensively made solid Roller Bearing consisting of hardened and ground rollers and castings is unavoidable for obvious reasons.

The Hyatt Bearing as is well known to the trade at large offers such conspicuous advantages in economy of construction and nature of design due to the flexibility of its rollers, that it may be made applicable to all conditions encountered in machine design. The inherent features of the Hyatt Bearing may be enumerated as follows,—

The Inherent Features of the Hyatt Bearing

1. The Hyatt Bearing is applicable to all speeds and loads, due to our ability to vary the nature of the rollers; thus, by employing light flexible rollers we obtain a bearing suitable for light work; by employing heavier and stiffer rollers we meet conditions involving heavy duty at slow speed.

2. The Hyatt roller cannot crush for it is designed to support the load with a proper factor of safety.

3. The flexibility of the Hyatt rollers insures a full line of contact as compared with series of points with either the solid rollers or balls, consequently a uniform distribution of load is obtained and there is no tendency to distort the metal of the journal or castings, entirely eliminating the necessity of hardened and ground surfaces.

4. The Hyatt roller acts as a natural oil reservoir while the right and left alternate spirals act as oil carriers.

5. The Hyatt roller has shown under tests to have a less coefficient of friction, hence higher efficiency, than any other design. For details of such tests consult other bulletins.

6. The Hyatt Bearing may be installed at a less first cost, due to our ability to produce it at a reasonable price and the elimination of specially prepared surfaces.

Facts and the Reasons Why

As will be seen from the previous discussion, the Hyatt Flexible Roller Bearing, from the very principle on which it is designed, has many points of superiority, and in order that they may be readily considered, we enumerate them as follows, giving as concisely as possible authority for our claims:

Durability

Absolutely uniform distribution of load on all parts of the roller and bearing surfaces, made possible by the flexibility of the Hyatt Roller, reduces the wear to a minimum, there being no tendency to distort the surface of the shaft and consequently cause wear.

Thoroughly Tested

As near as can be estimated there are between seven hundred and fifty thousand to a million Hyatt Rollers in operation at this time.

Oiling Capacity

The Rollers being hollow act as an oil reservoir; the spiral acts as an oil carrier.

Simplicity

No hardened steel sleeves, no machine work and no adjustment being necessary, therefore less time is required in either installation or taking apart.

Efficiency

Lower co-efficient of friction, on account of type of roller and higher efficiency due to the possibility of using larger rollers with the same outside diameter of casing, owing to the elimination of hardened sleeves or bushings.

Low Cost

Can be purchased at a low cost, due to simplicity of design and construction, and can be installed without any machine work whatever.

Fallacies and the Reasons Why

In discussion relative to the merits of the Hyatt Flexible Roller Bearing the following arguments are very frequently used, and we caution those without experience with this device, in order that they may not be misled. We would appreciate careful consideration of the points involved and to assist in this we offer the following suggestions:

Hyatt Flexible Rollers Will Not Crush

The Hyatt Flexible Roller is so designed that its crushing strength is suitably proportioned to the load under which it is to operate, allowing a liberal factor of safety.

No End Thrust Caused by the Hyatt Flexible Roller

As proof of this point, we offer the suggestion that the cages holding the rollers in alignment are usually made of very soft brass, and bearings that have been in operation for eight or ten years show no indication of any end thrust action of the rollers on the cage.

Hyatt Rollers Not in Contact When Under Load

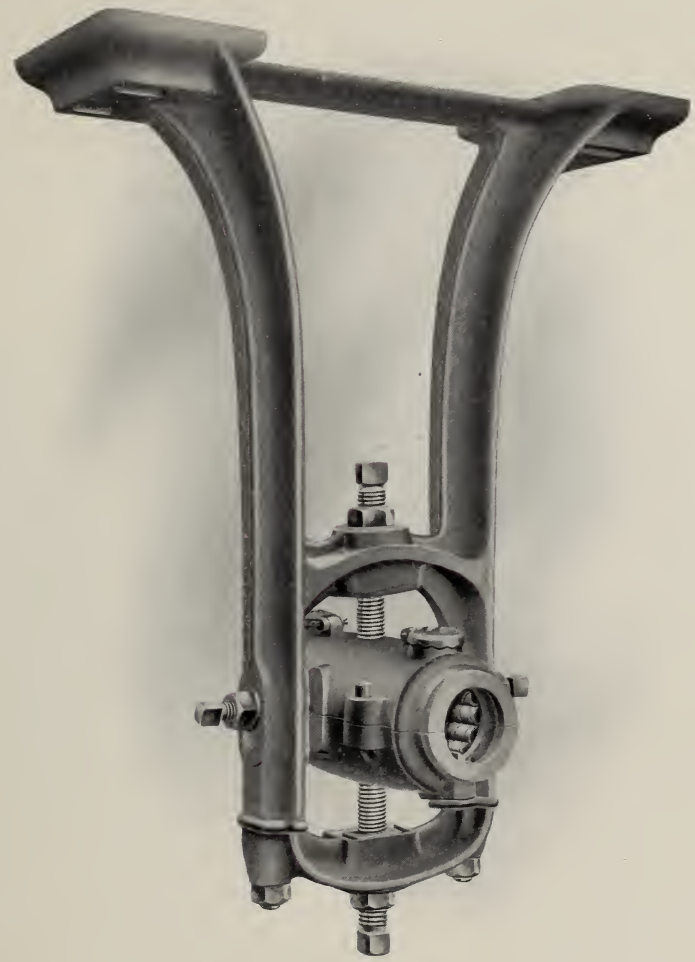
Inasmuch as adjacent rollers revolve in opposite directions, if same were in contact when under load they would have a tendency to grind. The facts, however, are that each roller when entering the zone or section of bearing under pressure, has a tendency to separate from the previous one, causing each when under load to be entirely independent in action.

Hyatt Rollers Do Not Require Hardened Surfaces

The flexibility enables the rollers to present contact along its entire length. The load, therefore, is uniformly distributed, there being no tendency whatever to distort the surface of the journal and consequently no tendency to wear.

Efficiency Independent of Life

There being no appreciable wear either on the roller itself or on the shaft, even when hardened steel sleeves are omitted, (the reason for which has already been explained) there can be no variation in the efficiency, no matter what the life of the bearing may be.



Double Braced Hyatt Drop Hanger.
Improved Self Oiling Roller Bearing Box.

THE PRINCIPAL APPLICATIONS OF THE HYATT BEARING

From the construction of the Hyatt Flexible Roller we might assume its range of applications to be practically unlimited. Upon investigating the results actually accomplished during the ten years that this device has been on the market, we find our conclusions amply substantiated.

As Applied to Shafting

In the mechanical transmission of power, we find hundreds of thousands of bearings in sucessful operation, many of which are operating under the most severe conditions. We do not find their use restricted to any particular class of equipment, all fields of industry being benefitted by the saving in friction and consequent reduction in the cost of power made possible by this device. In many instances we find that they are operating under conditions where it has been found impossible to operate any other bearing with any degree of satisfaction and in places where we might think dirt or grit would rapidly destroy the roller, proper results have been obtained.

As Applied Under Heavy Duty

To that great range of apparatus used in the transportation and handling of material such as trucks, cars, cranes, tumbling barrels and work of that kind, we also find similar results. In this class of duty the saving of power seems to make the proposition an exceptionally attractive one, as we find that twenty to twenty-five per cent. can easily be saved in equipments of this character.

As Applied to the Loose Pulley

Which is so liable to give trouble, especially in high speed apparatus, we find the Hyatt Roller Bushing in extensive use.

As Applied to High Speed Machinery

Of other descriptions, such as pulverizers, fans and apparatus of that character, remarkable results have been secured.

As Applied to Automobiles

The Hyatt Bearing has been found peculiarly suited to the complex variety of speed and load encountered. The fact that each year every former user, besides many new ones, have adopted this bearing in their models, speak stronger than any words of ours, in its favor.

On the following pages we will discuss in detail a few of these applications, with some illustrations, and to those interested, we should be very much pleased to send bulletins more fully describing each of these classes of work. On page 46 will be found a list of bulletins published by us.

Shafting

The adaptation of the Hyatt Flexible Roller to shafting in the mechanical transmisson of power consists of providing a box or suitable support for a series of rollers, the former being in turn supported by a hanger frame of such construction as may be desired. As will be appreciated from the description of this type of roller, no steel sleeves are necessary for the shaft, provided same be of steel and it follows, therefore, that this bearing can be applied as readily as any other. The extent to which this device is in use on this class of work, and continued orders from the most prominent manufacturers, fully substantiates our claims as to the results obtained. As far as durability is concerned, we can refer to installations that have been giving satisfactory operation for a long term of years and the fact that we guarantee all our bearings, should convince the prospective purchaser that the device has been thoroughly tested out and its merits substantiated. Space does not permit us to discuss in detail the many advantages of this type of bearing. We mention, however, a few points which may be of interest.

Saving of Power

Numerous tests have been made under all conditions of speed and load in all cases of equipments, and in every instance have justified our claims of a saving in power of ten to twenty-five per cent. With this as a basis, and figuring on the proper cost for power, we find that the extra cost of the roller bearing will be returned in the first year's operation by the saving of power alone. Judging from the standpoint of an investment, the result will be still more satisfactory and will make the proposition one that cannot be ignored by any one in any way desirous of obtaining the best results in his power equipment.

Saving in Lubrication

The friction being so largely reduced by the substitution of rolling for rubbing friction, the amount of lubricant is diminished in similar proportion. Actual tests have shown that 75 per cent. less is required with a roller bearing, in economy which in itself will compare with the extra cost.

Saving in Belting

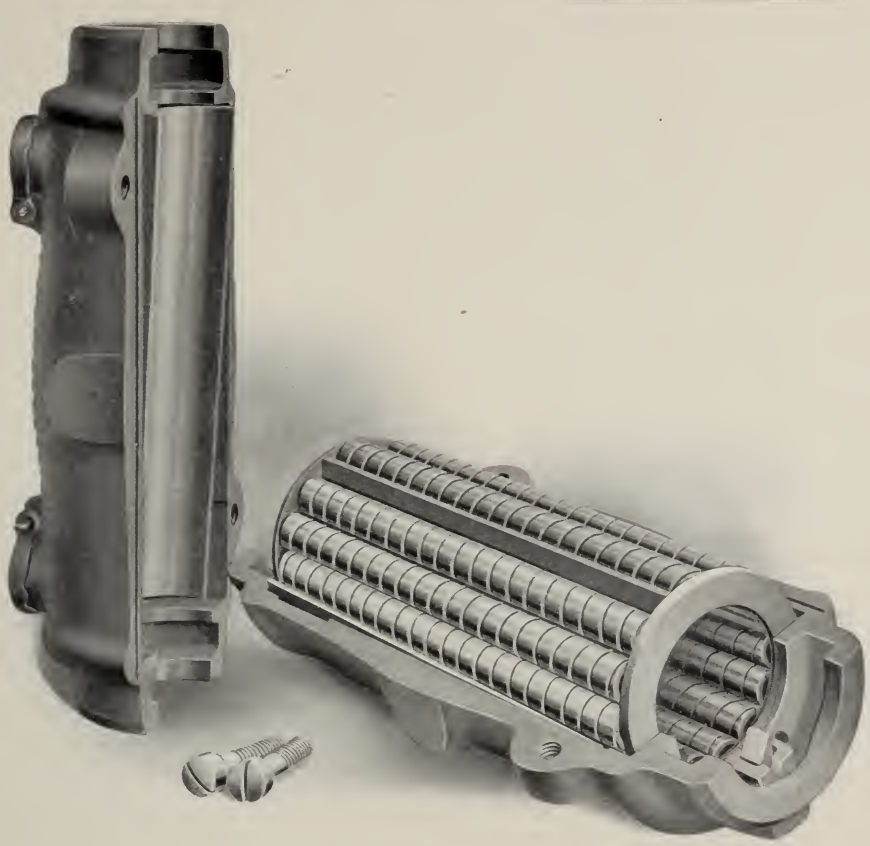
Friction being so largely eliminated, less power is needed to perform the same work, consequently less belting is required and for the same amount of belting, the life is correspondingly increased.

No Hot Bearings

While in general transmission difficulty with hot bearings might be considered negligible, on the other hand there are places in nearly every establishment where more or less annoyance, and in some instances enforced stoppage of work is caused in this way. The Hyatt Roller Bearing has been applied in many such instances where every other method has failed and in every case our claims have been substantiated. We shall be glad to send complete record of these to those interested.

Durability

No matter how great the efficiency or benefits obtained by any device may be, the results from the standpoint of the user are entirely dependent upon its durability. Our experience with the Hyatt Flexible Roller Bearing during the past ten years justifies us in thoroughly recommending same from this standpoint. Babbitted Bearings may be renwed from time to time, but we have never yet replaced new for worn out rollers where the original have been properly designed for the speed and load under which they have been operating. On shafting we expect them to last a generation, but even if their life should fall short of this, the user who each year saves not only the value of the rollers but the entire bearing, certainly can find no fault with the investment.



Hyatt Improved Self Oiling Shafting Box Partially Assembled.

Saving in Investment

An economy of ten to twenty per cent. in power in many instances, has enabled a smaller engine to accomplish the same result with marked decrease in original outlay; in other cases the purchase of a larger engine has been avoided by the extra power made available by the saving in friction. With electric drives it has been found possible to obtain the same results with a smaller motor and by grouping several machines and operating same by a short line of shafting equipped with Hyatt Bearings, the highest efficiency of all methods of driving is secured.

Extract From Report of Comparative Test Between HYATT ROLLER BEARINGS and Ordinary Babbitted Bearings

Conducted by the Engineering Department of the United Shoe Machinery Company, at their McKay Department Factory, Swanton Street, Winchester, Mass., between August 24th and October 3, 1903.

Purpose of the Test

In conducting these tests it was desired to obtain the saving in the friction load made possible by the Hyatt Bearings compared with the babbitted bearings then installed, all conditions being our actual shop conditions. These conditions were divided into two classes, the first with the shaft under test in the level alignment as it existed on August 24th, 1903, and the second with this shaft carefully re-aligned and releveled. The results obtained would thus be on a commercial basis similar to our conditions and could be used by us in estimating the saving which the Hyatt Bearings could produce if installed throughout our new plant.

Description of Equipment

The line of shaft which was tested is 152 feet long, $2\frac{15}{16}$" diam. and is supported by twenty bearings. It is belt driven at one end from a head shaft; belted from this shaft are the counters of eighty-eight machine tools and in considering the results it will be seen that only a small part of the friction load on this floor is caused by the main shaft itself. No changes were allowed in the countershafts or belts during the progress of the test.

Description of Testing Apparatus

During the time of each day's observation, the shaft was driven by a 35 H. P. M. P. 580 rev. 110 volt., D. C. G. E. motor No. 54451, obtained from the General Electric Company for testing purposes. This motor was provided with an efficiency curve giving the relation between H. P. input and H. P. output. The measuring instruments were one Weston's Portable direct reading millivoltmeter adjusted to a Weston three range shunt, also one Weston direct reading

voltmeter. Care was taken that all conditions surrounding the motor, the connections, and the instruments remained uniform.

Summary of Results

Average friction load of floor—88 Counters constantly running in Babbitted Bearings:
- Main shaft in Babbitted Bearings, . . 8.85 H. P.
- Main shaft in Hyatt Roller Bearings, . . 6.36 H. P.
- Per cent. of saving by Hyatt Roller Bearings, 16.7%

Average friction load of main shaft only, all Counter belts thrown off :
- In Babbitted Bearings . . . . . 2.28 H. P.
- In Hyatt Roller Bearings, ...80 H. P.
- Per cent. of saving by Hyatt Roller Bearings, 64 9%

Official test signed by : UNITED SHOE MACHINERY CO.
Engineering Department.
Per L. P. ALFORD and C. E. BLACKWELL,
In Charge of Tests.

Dated Boston, Mass., Oct. 4, 1903.

Condensed Price List

On the following pages will be found price lists of the principal standard sizes of shaft hangers, pillow blocks and boxes. Prices of sizes in sixteenths only are given. Prices of bearings of even sizes and fractions will be found in Bulletin Twenty-two, copy of which will be sent upon application.

Attention is called to the fact that all regular bearings $3\frac{3}{16}$ and smaller are applicable for speeds to 600 revolutions per minute ; larger sizes to 400. For speeds up to 1000 revolutions for smaller sizes and 750 for larger, take list of bearing for shaft one-quarter inch larger. As has already been noted, the Hyatt Bearing is particularly applicable to high speed and we shall be pleased to quote prices on application covering bearings applicable to such work, no matter what the conditions may be.

Frames attached to steel or iron supports should be machined for which an extra charge will be made. Regular frames are not machined on base, except when furnished in connection with sole or base plates, or floor stands. Any changes in regular patterns, such as short or special bearings, will involve extra cost as well as more or less delay.

All frames furnished are generously proportioned and have been thoroughly tested out during many years' service. Our standard Hyatt type, as illustrated on page 13 will be furnished unless otherwise specified.

The shafting boxes are of latest improved type having self-closing oil covers and automatic oil wipers causing the oil to be scraped off the shaft and returned to the bearing through gutter or oil chamber at each end of the box.

Double Braced Drop Hangers

HYATT FLEXIBLE ROLLER BEARINGS

See Illustration Page 13

PRICE LIST

For speeds 600-1000 on $3\frac{3}{16}$ shafts or less or for speeds 400-750
For shafts over $3\frac{3}{16}$ take list of shaft one quarter inch larger.

	DROP IN INCHES.									
Diam. Shaft	6-8	9-11	12-14	15-17	18-20	21-23	24-26	27-29	30-32	33-35
$1\frac{7}{16}$	12.25	12.75	13.50	14.25	14.75	15.75	17.25			
$1\frac{11}{16}$	13.50	14.00	14.75	15.50	16.00	17.00	18.50			
$1\frac{15}{16}$	15.00	16.25	17.25	18.25	19.50	21.75	23.25	24.50	26.00	27.75
$2\frac{3}{16}$	17.50	19.00	19.75	20.75	22.00	24.25	25.75	27.00	28.25	29.75
$2\frac{7}{16}$	25.00	25.75	26.50	28.75	30.25	31.25	32.00	33.25	34.25	35.75
$2\frac{11}{16}$	28.00	28.75	29.50	31.75	33.25	34.25	35.00	36.50	38.25	39.50
$2\frac{15}{16}$	33.75	35.00	36.00	36.75	38.00	39.25	40.50	42.00	43.50	45.25
$3\frac{3}{16}$	37.75	39.00	40.00	40.75	42.00	42.75	44.50	46.50	48.25	50.00
$3\frac{7}{16}$	48.75	49.75	50.75	52.75	54.75	56.75	59.00	62.00	65.00	68.00
$3\frac{11}{16}$	59.25	60.25	61.25	63.25	65.25	67.25	69.50	72.50	75.50	78.50
$3\frac{15}{16}$		88.00	90.00	92.00	95.00	98.00	101.50	104.00	107.00	110.00
$4\frac{3}{16}$		94.00	96.00	98.00	101.00	104.00	107 50	110.00	113.00	116.00
$4\frac{7}{16}$			114.50	116.00	119.00	123.00	126.00	129.00	132.00	135.00
$4\frac{11}{16}$			125.50	128.00	131.00	135.00	138.00	141.00	144.00	147.00
$4\frac{15}{16}$			151.00	155.00	159.00	163.00	167.00	171.00	175.00	179.00

Double Braced Post Hangers
HYATT FLEXIBLE ROLLER BEARINGS
PRICE LIST

Diameter Shaft.....	$1\frac{7}{16}$	$1\frac{11}{16}$	$1\frac{15}{16}$	$2\frac{3}{16}$	$2\frac{7}{16}$	$2\frac{11}{16}$	$2\frac{15}{16}$	$3\frac{3}{16}$
Price List.....	11.75	13.00	16.00	18.50	24.50	27.50	35.50	39.50
Diameter Shaft.....	$3\frac{7}{16}$	$3\frac{11}{16}$	$3\frac{15}{16}$	$4\frac{7}{16}$	$4\frac{15}{16}$	$5\frac{7}{16}$	$5\frac{11}{16}$	$5\frac{15}{16}$
Price List.....	48.50	59.00	73.50	101.00	138.00	180.00	200.00	230.00

Ball and Socket Pillow Blocks
HYATT FLEXIBLE ROLLER BEARINGS
PRICE LIST

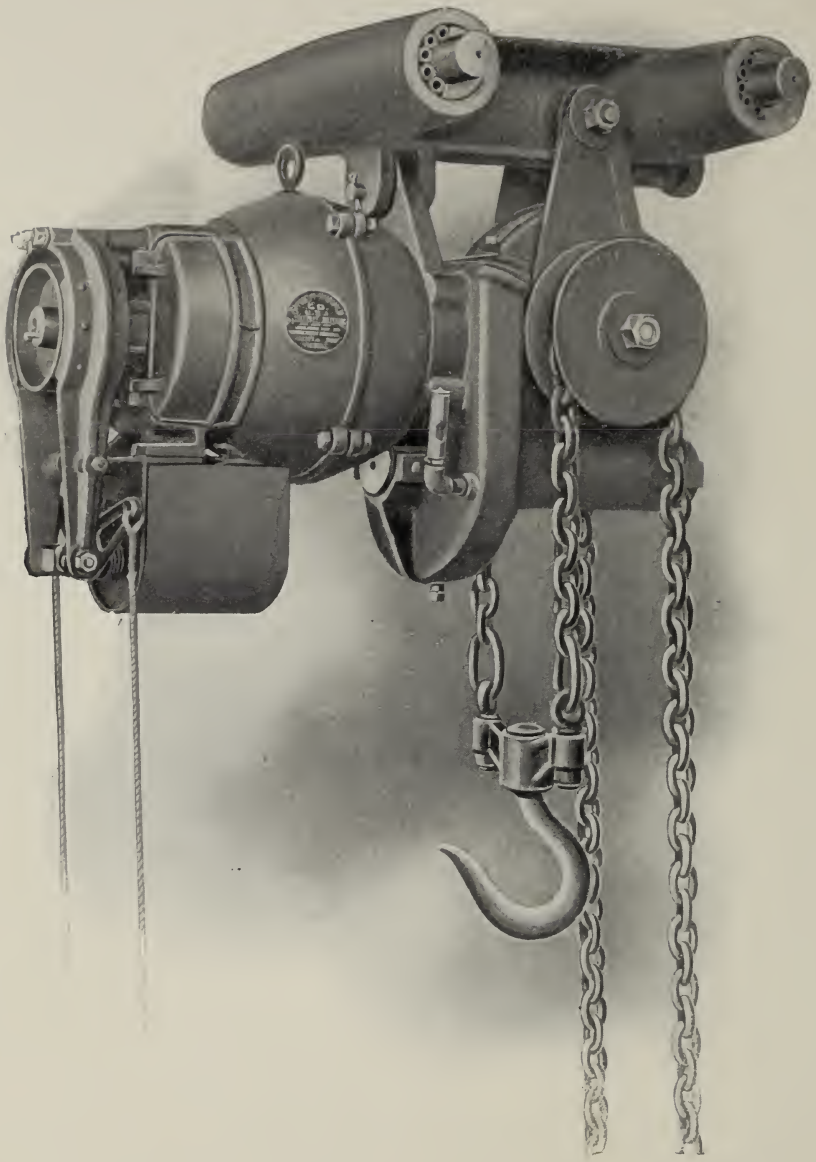
Diameter Shaft.....	$1\frac{3}{16}$	$1\frac{7}{16}$	$1\frac{11}{16}$	$1\frac{15}{16}$	$2\frac{3}{16}$	$2\frac{7}{16}$	$2\frac{11}{16}$	$2\frac{15}{16}$	$3\frac{3}{16}$
Price List	9.00	10.25	11.50	13.25	15.75	21.50	24.50	30.75	34.75
Diameter Shaft.....	$3\frac{7}{16}$	$3\frac{11}{16}$	$3\frac{15}{16}$	$4\frac{3}{16}$	$4\frac{7}{16}$	$4\frac{11}{16}$	$4\frac{15}{16}$	$5\frac{3}{16}$	
Price List.....	43.00	53.50	68.00	74.00	80.00	92.00	109.00	128.00	

Diameter Shaft.....	$5\frac{7}{16}$	$5\frac{11}{16}$	$5\frac{15}{16}$	$6\frac{3}{16}$	$6\frac{7}{16}$	$6\frac{11}{16}$	$6\frac{15}{16}$
Price List.....	143.00	163.00	200.00	225.00	245.00	270.00	320.00
Diameter Shaft.....	$7\frac{7}{16}$	$7\frac{15}{16}$	$8\frac{7}{16}$	$8\frac{15}{16}$			
Price List.....	420.00	510.00	600.00	720.00			

The above list prices are for shafts operating at 600 rev. or less on $3\frac{3}{16}$ or less and 400 rev. or less on shafts over $3\frac{3}{16}$.

For list prices of Rigid Pillow Blocks, Adjustable Pillow Blocks, Wall Frames, Sole Plates, etc., see Bulletin number Twenty-two.

For list prices of low diameters and low fractions see Bulletin Twenty- two.



The Standard Sprague Hoist
Regularly equipped with Hyatt Bearings.

Steel Shafting Boxes

HYATT FLEXIBLE ROLLER BEARING

We have during the past six or seven years equipped a number of large plants throughout the country, by furnishing roller bearing boxes only, made so as to fit into hanger frames already in place; thus enabling such equipments to benefit by the economy of the roller bearings at a minimum cost and without serious interruption to the operating of the plant in question. There are many cases where this change has obviated the necessity of a larger engine or boiler, in others considerable additional machinery has been operated with the same plant and with the same expenditure of fuel, and in still others a considerable saving has been effected in the consumption of fuel. As the result, we now have box patterns on hand for a large number of various styles of hanger frames in a variety of shaft diameters. The outside of these boxes are so designed that they will fit the frames for which they are made, admitting of the same method of adjustment and requiring no machine work in fitting.

PRICE LIST

Diameter Shaft.....	$1\frac{7}{16}$	$1\frac{11}{16}$	$1\frac{15}{16}$	$2\frac{3}{16}$	$2\frac{7}{16}$	$2\frac{11}{16}$	$2\frac{15}{16}$	$3\frac{3}{16}$
Price List.....	9.50	11.00	12.25	15.00	20.50	23.50	28.00	32.50
Diameter Shaft.....	$3\frac{7}{16}$	$3\frac{11}{16}$	$3\frac{15}{16}$	$4\frac{3}{16}$	$4\frac{7}{16}$	$4\frac{11}{16}$	$4\frac{15}{16}$	
Price List.....	38.00	51.00	60.00	66.00	72.50	86.00	100.00	

For other diameters of shafts see Bulletin Twenty-two.

Heavy Duty

In General

In no class of apparatus is the friction reducing device more applicable nor its advantages more apparent than in that involving the transportation and manipulation of material in its various stages of manufacture in the modern mill or factory, nearly all of which operations involve on the bearing heavy duty at slow speed. To illustrate this we might enumerate specific instances, such as the traveling crane, the industrial railway, the shop truck and

in such applications where labor is involved it is frequently possible to dispense with one, two or even three hands, and where power is involved, twenty to forty per cent. less will produce equal results. In every instance, no matter what the conditions may be, a saving is effected in comparison with which the extra cost of the bearing is insignificant, in fact it would seem almost impossible to secure greater value at the same cost than in this saving of friction or reduction of useless work.

With this in view, and considering the character of the type of roller with which we are dealing, we should expect to find it in considerable use in apparatus of this character. Investigation confirms us in this conclusion. We find that many manufacturers of cars, trucks, cranes and work of that description have found it to their advantage to adopt this bearing, having investigated thoroughly all classes of anti-friction devices, reaching the conclusion that all things considered, the Hyatt type was the most efficient as well as the most satisfactory and durable. Investigation further demonstrates that no matter how severe the work may be, satisfactory results seem to be obtained. We find the ingot cars in our modern steel plants, in which the bearings are called upon to carry loads as great as twenty-five thousand pounds, equipped with these rollers, and showing a remarkable reduction in the amount of power required for operation and still more remarkable economy in the power necessary to start same. On high speed, heavy duty electric traveling cranes, equally satisfactory results have been obtained; in fact, there seems to be no end of the many useful applications to which this bearing has been tested and not found wanting.

Design

The great range of applications of the Hyatt Flexible Roller Bearing makes it necessary to provide for equal range in the conditions of speed and load; it is essential, therefore, as will be noted from our consideration of the mechanical features involved, to consider with this type of bearing the work to be performed and design same, having in view such conditions. To illustrate this, we take the specific instance of a bearing to be operated under a certain load at fifty revolutions per minute. In case we increase speed to 500 revolutions it is essential that not only the diameter of roller be increased, but its character changed by making it more flexible and better adapted to the varied duty at the higher speed. It will be seen therefore, that it is impossible to determine once and for

all, certain proportions applicable to all cases, it being necessary to design each constituent part of the bearing as experience and experiment may have shown advisable under those particular conditions.

To assist in this, the following suggestions may be of value. It should be noted, however, that the tables and loads mentioned are only applicable to specifications where speed does not exceed fifty revolutions per minute.

Loads are figured on a basis of a square inch of projected area, obtained by the product of the diameter of journal and length of bearing, the latter being determined as hereafter described. At speeds no greater than fifty revolutions per minute, the safe working load, assuming that all parts of the bearing are properly proportioned, may be figured at 500 pounds per square inch, but in many instances it is possible to increase this to even 1,000 pounds. We have bearings operating under still more severe conditions, but it is not desirable and where possible, the bearing should be so proportioned as to bring the load within the limits first above stated.

The roller is varied in character according to the load and speed under which it is to operate. It is essential to so build same as to obtain maximum flexibility, at the same time insuring sufficient strength to support load with a proper factor of safety. It is essential, therefore, in order to obtain the best results, that the conditions should be carefully considered.

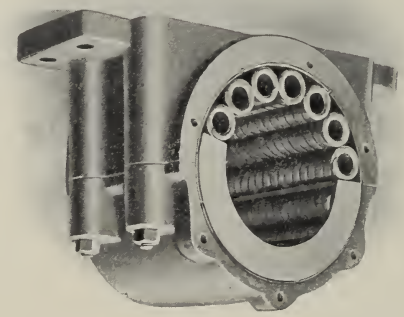
Having determined the diameter of journal as well as that of roller, we should next determine the length, having in mind that the projected area should be great enough to keep, if possible, within five hundred pounds per square inch. It should be noted that outside of exceptional instances, the minimum length of bearing should be twice the diameter of journal, three times being still better practice. Lengths specified by us represent length of bore for bearing, we allowing suitable clearance.

We refer to the steel lining as the outer bushing in which the rollers operate, and inasmuch as same is in nearly every instance required, we include it unless otherwise directed. In case the box or support for the bearing is steel, the lining may be omitted, but even in instances of steel castings, we recommend its use, owing to uncertainty in texture of such material and its liability to disintegrate under heavy load. Linings may be whole or split as may be required. Unless otherwise specified they will be whole.

We refer to the steel sleeve as the surface on which rollers operate when shaft or journal is iron or material other than steel. Inasmuch as steel axles are

almost invariably used, steel sleeves are not furnished unless specified. The sleeve is similar to the lining and may be either whole or split, as may be desired.

The outside diameter of steel lining increased by a proper clearance, determines the required bore for casting. Attention is called to the fact that owing to variations in thickness of commercial steel, it is impossible to state definitely once and for all just what the bore will be for any particular size shaft and roller. The outside diameters of the various bushings, with and without linings and sleeves, specified in the tables, are therefore only approximate, but will suffice to complete patterns and prepare castings. Immediately upon request or receipt of order, we issue dimension sheets giving exact figures to which castings should be bored. It is possible in all duplicate work and sometimes in instances of castings already machined to make bore correspond to certain specifications.



Hyatt Roller Bearing Car Box
End Plate Removed.

Table of Dimensions for Medium Loads

We print below a table of approximate safe outside diameter of Hyatt Bearings designed for conditions involving loads up to 400 pounds per square inch of projected area.

Diameter of Shaft.	Load—200 Lbs. Per Sq. In. of Proj. Area.					Load—400 Lbs. Per Sq. In. of Proj. Area.				
	Diameter of Roller.	Thickness of Lining.	Thickness of Sleeve.	O. D. with Lining.	O. D. with Sleeve & Lining	Diameter of Roller.	Thickness of Lining.	Thickness of Sleeve.	O. D. with Lining.	O. D with Sleeve & Lining
1¼	½	1–16	⅛	2⅜	2⅝	⅝	1–16	⅛	2⅝	2⅞
1½	½	1–16	⅛	2⅝	2⅞	⅝	1–16	⅛	2⅞	3⅛
1¾	½	1–16	⅛	2⅞	3⅛	⅝	1–16	⅛	3⅛	3⅜
2	½	1–16	⅛	3⅛	3⅜	⅝	1–16	⅛	3⅜	3⅝
2¼	½	⅛	⅛	3½	3¾	⅝	⅛	⅛	3¾	4
2½	⅝	⅛	⅛	4	4¼	¾	⅛	⅛	4¼	4¼
2¾	⅝	⅛	⅛	4¼	4½	¾	⅛	⅛	4½	4¾
3	¾	⅛	⅛	4½	5	⅞	⅛	⅛	5	5¼
3¼	¾	⅛	⅛	5	5¼	⅞	⅛	⅛	5¼	5½
3½	¾	⅛	⅛	5¼	5½	⅞	⅛	⅛	5½	5¾
3¾	¾	⅛	⅛	5½	5¾	⅞	⅛	⅛	5¾	6
4	⅞	⅛	⅛	6	6¼	1	⅛	⅛	6¼	6½
4¼	⅞	⅛	1–16	6¼	6⅝	1	⅛	3–16	6½	6⅞
4½	⅞	⅛	1–16	6½	6⅞	1	⅛	3–16	6¾	7⅛
4¾	⅞	⅛	1–16	6¾	7⅛	1	⅛	3–16	7	7⅜
5	1	⅛	1–16	7¼	7⅝	1⅛	⅛	3–16	7½	7⅞
5¼	1	⅛	1–16	7½	7⅞	1⅛	⅛	3–16	7¾	8⅛
5½	1	⅛	1–16	7¾	8⅛	1⅛	⅛	3–16	8	8⅜
5¾	1	⅛	1–16	8	8⅜	1⅛	⅛	3–16	8¼	8⅝
6	1⅛	⅛	1–16	8½	8⅞	1¼	⅛	3–16	8¾	9⅛

Speed not greater than 50 revolutions per minute. Outside diameters are approximate only, and do not represent bore of casting. See explanation under "Dimension Sheet" and "Bore." For intermediate sizes, deduct from next larger O. D. amount shaft is smaller. Larger sizes of shaft on application. For higher speed, see tables in other Bulletins.

Table of Dimensions for Extreme Loads

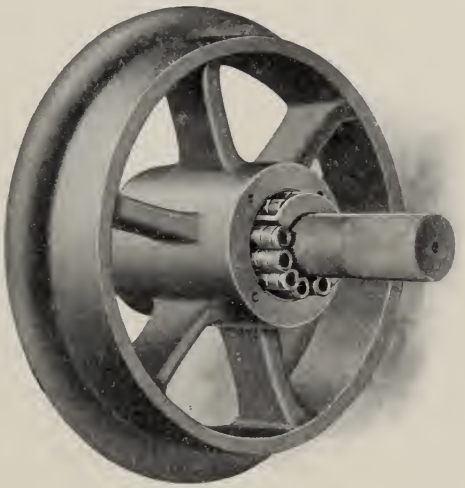
We print below a table of approximate safe outside diameters of Hyatt Bearings designed for conditions involving loads fron 400 to 800 Pounds per inch of projected area.

Diameter of Shaft.	Load—600 Lbs. Per Sq. In. of Proj. Area.					Load—800 Lbs. Per Sq. In. of Proj. Area.				
	Diameter of Roller	Thickness of Lining.	Thickness of Sleeve.	O. D. with Lining.	O. D. with Sleeve & Lining.	Diameter of Roller	Thickness of Lining.	Thickness of Sleeve.	O. D. with Lining.	O. D. with Lining & Sleeve.
1¼	¾	1–16	⅛	2⅞	3⅛	⅞	1–16	⅛	3⅛	3⅜
1½	¾	1–16	⅛	3⅛	3⅜	⅞	1–16	⅛	3⅜	3⅝
1¾	¾	1–16	⅛	3⅜	3⅝	⅞	1–16	⅛	3⅝	3⅞
2	¾	1–16	⅛	3⅝	3⅞	⅞	1–16	⅛	3⅞	4⅛
2¼	¾	⅛	⅛	4	4¼	⅞	⅛	⅛	4¼	4½
2½	⅞	⅛	⅛	4½	4¾	1	⅛	⅛	4¾	5
2¾	⅞	⅛	⅛	4¾	5	1	⅛	⅛	5	5¼
3	1	⅛	⅛	5¼	5½	1⅛	⅛	⅛	5½	5¾
3¼	1	⅛	⅛	5½	5¾	1⅛	⅛	⅛	5¾	6
3½	1	⅛	⅛	5¾	6	1⅛	⅛	⅛	6	6¼
3¾	1	⅛	⅛	6	6¼	1⅛	⅛	⅛	6¼	6½
4	1⅛	⅛	⅛	6½	6¾	1¼	⅛	⅛	6¾	7
4¼	1⅛	⅛	⅛	6¾	7⅛	1¼	⅛	3–16	7	7⅜
4½	1⅛	⅛	⅛	7	7⅜	1¼	⅛	3–16	7¼	7⅝
4¾	1⅛	⅛	3–16	7¼	7⅝	1¼	⅛	3–16	7½	7⅞
5	1¼	⅛	3–16	7¾	8⅛	1⅜	⅛	3–16	8	8⅜
5¼	1¼	⅛	3–16	8	8⅜	1⅜	⅛	3–16	8¼	8⅝
5½	1¼	⅛	3–16	8¼	8⅝	1⅜	⅛	3–16	8½	8⅞
5¾	1¼	⅛	3–16	8½	8⅞	1⅜	⅛	3–16	8¾	9⅛
6	1⅜	⅛	3–16	9	9⅜	1½	⅛	3–16	9¼	9⅝

Speed not greater than 50 revolutions per minute. Outside diameters are approximate only, and do not represent bore of casting. See explanation under "Dimension Sheet" and "Bore." For intermediate sizes, deduct from next larger O. D. amount shaft is smaller. Larger sizes of shaft on application. For higher speeds, see tables in other Bulletins.

Mine Wheel Bearings

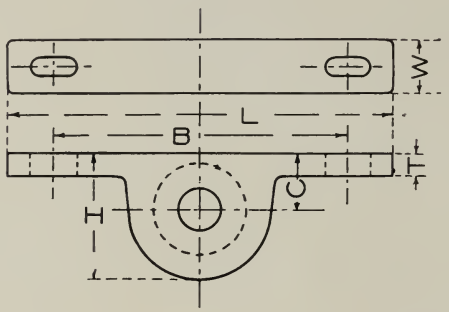
To those desirous of obtaining greater economy in the cost of haulage and in the maintenance of apparatus connected therewith, attention is called to the application of the Hyatt Flexible Roller Bushing to mine car wheels of every description. This type of bearing has been largely used for the past ten years on all classes of work, and no matter what the conditions have been, the best results have been obtained in every instance where the bearing has been properly designed and operating under proper conditions. The illustration on the first page covers fully the application of this bearing to the ordinary form of mine car wheel. It is to be noted that in addition to the oil reservoir capacity of the rollers there is what is essentially an oil reservoir on the outside of the hub. Means are provided for introducing oil without difficulty, and, on account of the



Standard Hyatt Mine Car Wheel.

character of the roller and the construction of the wheel, all parts of the bearing must be lubricated, provided there is any oil whatever in the wheel. Collars are provided to take up all thrusts. The entire coustruction is practically dust proof and has been found to give the highest class of results in actual service. Attention is called to the advantages of this construction on the next page.

Dimensions of
STANDARD HYATT CAR BOXES



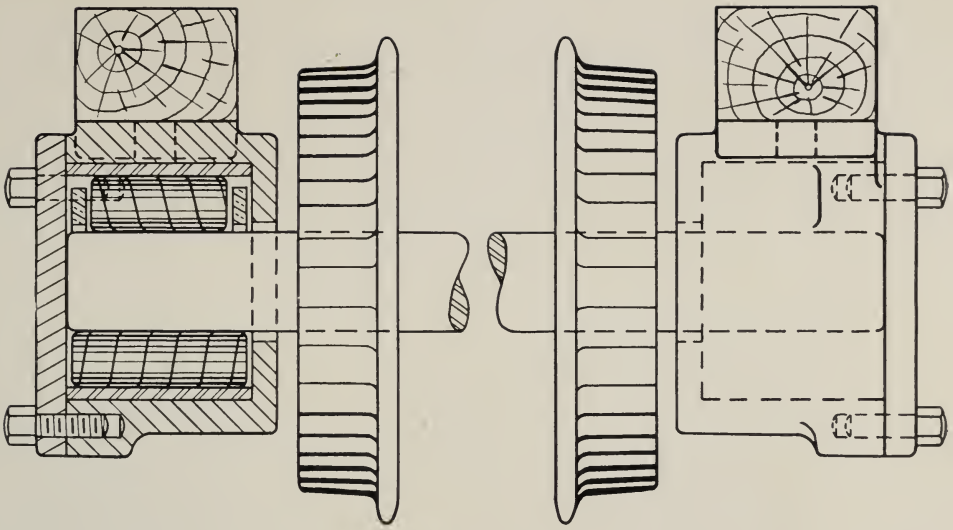
1 Dimensions of Shaft	2 Principal Dimensions See page 32 for lengths.											
	Solid						Split					
	L	W	B	C	H	T	L	W	B	C	H	T
$1\frac{7}{16}$ in. or $1\frac{1}{2}$ in.	$7\frac{3}{4}$	$2\frac{3}{4}$	$5\frac{7}{8}$	$2\frac{1}{16}$	$4\frac{5}{16}$	$\frac{1}{2}$	10	$2\frac{3}{4}$	8	$2\frac{1}{16}$	$3\frac{15}{16}$	$\frac{1}{2}$
$1\frac{11}{16}$ " $1\frac{3}{4}$ "	8	$2\frac{3}{4}$	$6\frac{1}{8}$	$2\frac{3}{16}$	$4\frac{9}{16}$	$\frac{1}{2}$	10	$2\frac{3}{4}$	$8\frac{1}{4}$	$2\frac{3}{16}$	$4\frac{3}{16}$	$\frac{1}{2}$
$1\frac{15}{16}$ " 2 "	$9\frac{1}{2}$	$3\frac{1}{4}$	$7\frac{1}{4}$	$2\frac{9}{16}$	$5\frac{3}{16}$	$\frac{5}{8}$	12	$3\frac{1}{4}$	$9\frac{3}{4}$	$2\frac{9}{16}$	$4\frac{15}{16}$	$\frac{5}{8}$
$2\frac{3}{16}$ " $2\frac{1}{4}$ "	$10\frac{1}{2}$	$3\frac{1}{4}$	$8\frac{1}{8}$	$2\frac{15}{16}$	$6\frac{1}{16}$	$\frac{5}{8}$	12	$3\frac{1}{4}$	$9\frac{7}{8}$	$2\frac{15}{16}$	$5\frac{5}{8}$	$\frac{5}{8}$
$2\frac{7}{16}$ " $2\frac{1}{2}$ "	11	$3\frac{1}{4}$	$8\frac{3}{8}$	$3\frac{5}{16}$	$6\frac{9}{16}$	$\frac{3}{4}$	$13\frac{1}{2}$	$3\frac{1}{4}$	11	$3\frac{5}{16}$	$6\frac{3}{8}$	$\frac{3}{4}$
$2\frac{11}{16}$ " $2\frac{3}{4}$ "	$11\frac{1}{2}$	$3\frac{3}{4}$	9	$3\frac{1}{2}$	$6\frac{15}{16}$	$\frac{3}{4}$	14	$3\frac{3}{4}$	$11\frac{3}{8}$	$3\frac{1}{2}$	$6\frac{11}{16}$	$\frac{3}{4}$
$2\frac{15}{16}$ " 3 "	$12\frac{1}{4}$	$4\frac{1}{2}$	$9\frac{1}{2}$	$3\frac{3}{4}$	$7\frac{1}{2}$	1	15	$4\frac{1}{2}$	12	$3\frac{3}{4}$	$7\frac{1}{4}$	1
$3\frac{7}{16}$ " $3\frac{1}{2}$ "	14	$5\frac{1}{2}$	$11\frac{1}{4}$	$4\frac{7}{16}$	$8\frac{3}{4}$	1	17	$5\frac{1}{2}$	$14\frac{1}{8}$	$4\frac{7}{16}$	$8\frac{1}{2}$	1
$3\frac{15}{16}$ " 4 "	$15\frac{3}{4}$	$5\frac{1}{2}$	$12\frac{3}{8}$	$4\frac{15}{16}$	$9\frac{1}{2}$	$1\frac{1}{8}$	$18\frac{1}{2}$	$5\frac{1}{2}$	$15\frac{1}{8}$	$4\frac{15}{16}$	$9\frac{3}{8}$	$1\frac{1}{8}$
$4\frac{7}{16}$ " $4\frac{1}{2}$ "	$17\frac{1}{4}$	$6\frac{1}{2}$	$13\frac{3}{4}$	$5\frac{1}{4}$	$10\frac{11}{16}$	$1\frac{1}{4}$	$20\frac{1}{2}$	$6\frac{1}{2}$	17	$5\frac{1}{4}$	$10\frac{5}{16}$	$1\frac{1}{4}$

For prices see page 32.

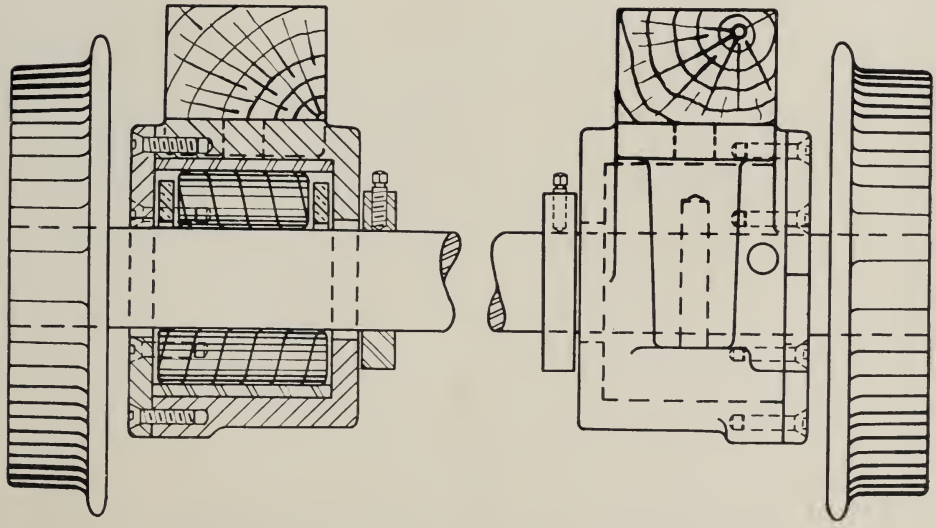
Note Carefully

Bases are machined, also one end for collar. We have numerous special patterns, and will gladly furnish special designs for any capacity without cost. Bases of all bearings of minimum length are central; extra length can be offset without extra cost.

Car Boxes



Arrangement of Hyatt Solid Standard Car Boxes (One end closed.)



Arrangement of Hyatt Split Standard Car Boxes (Both ends opened.)

CAR BOXES

Price List and Capacity of

STANDARD HYATT CAR BOXES

1 Dimensions of Shaft	3 Outside Length of Box		4 Working Load Minimum Length		5 Price each Minimum Length		6 Increase per inch or less of length				Price each Maximum Length	
							Working Load		Price			
	Minimum	Maximum	Advisable A	Maximum B	Solid	Split	Advisable A	Maximum B	Solid	Split	Solid	Split
$1\frac{7}{16}$ in. or $1\frac{1}{2}$ in.	$3\frac{3}{4}$	$6\frac{3}{4}$	800	1200	$3.00	$3.60	300	400	$.25	$.30	$3.75	$4.50
$1\frac{11}{16}$ " $1\frac{3}{4}$ "	$3\frac{3}{4}$	$6\frac{3}{4}$	1200	1500	3.60	4.25	300	400	.30	.35	4.50	5.30
$1\frac{15}{16}$ " 2 "	$4\frac{1}{4}$	$8\frac{1}{4}$	1750	2250	4.30	5.00	400	500	.30	.35	5.50	6.40
$2\frac{3}{16}$ " $2\frac{1}{4}$ "	$4\frac{1}{4}$	$8\frac{1}{4}$	2000	2500	5.10	5.80	500	600	.30	.35	6.30	7.20
$2\frac{7}{16}$ " $2\frac{1}{2}$ "	$4\frac{3}{8}$	$8\frac{3}{8}$	2250	3000	6.00	6.90	600	700	.35	.40	7.40	8.50
$2\frac{11}{16}$ " $2\frac{3}{4}$ "	$4\frac{7}{8}$	$8\frac{7}{8}$	3000	3500	7.25	8.00	700	800	.40	.45	8.85	9.80
$2\frac{15}{16}$ " 3 "	6	10	3750	4500	8.75	9.50	800	900	.60	.70	11.15	12.30
$3\frac{7}{16}$ " $3\frac{1}{2}$ "	7	12	5000	6500	11.75	14.00	900	1000	.80	.90	15.75	18.50
$3\frac{15}{16}$ " 4 "	$7\frac{1}{8}$	$12\frac{1}{8}$	7000	10000	15.00	17.00	1100	1500	1.00	1.15	20.00	22.75
$4\frac{7}{16}$ " $4\frac{1}{2}$ "	$8\frac{1}{4}$	$13\frac{1}{4}$	10000	14000	16.50	20.00	1600	1800	1.25	1.40	25.25	27.00

If ordered in lots of 1 to 4 of one size at one time—Net
" " " " 4 " 24 " " " 10% discount.
" " " " 25 " 99 " " " 15% "
" " " " 100 " or more " " Special discount.

PRICES SUBJECT TO CHANGE WITHOUT NOTICE.

Note Carefully

Speeds must not exceed 75 revolutions. Axles assumed steel and horizontal unless otherwise specified. Greater loads are permissible only when we have full particulars. Changes in base and bolt holes at cost for 1 beam or other special supports.

CABLE ADDRESS
"WOODMACHO" NEW YORK
A.B.C. LIEBERS & WESTERN UNION CODES

INCORPORATED SEPT 30TH 1901

AMERICAN WOOD WORKING MACHINERY COMPANY.

SUCCESSOR BY PURCHASE TO
PUTNAM MACHINE CO
GLEN COVE MACHINE CO LTD
HOYT & BRO. CO
LEY-HOUSTON CO
CLOSE MACHINE CO
LEHMAN MACHINE CO
WILLIAMSPORT WOODWORKING MFG CO
CRESCENT M'F'G CO
ROWLEY & HORMANN CO
WILLIAMSPORT MACHINE CO.
YOUNG BROS CO

136 LIBERTY STREET.

SALESROOMS
NEW YORK, 136 LIBERTY ST
CHICAGO 438 & 45 SO CANAL ST
NEW ORLEANS, LA. HENNEN BLDG

New York, Nov. 18, 1905.

Hyatt Roller Bearing Co.,

Harrison, N. J.

Gentlemen:

We have been using the Hyatt Roller Bearing bushings in our loose pulleys on our heavier machines where heavy duty is required and we have found them more satisfactory than any thing else we have tried for this purpose.

Yours very truly,

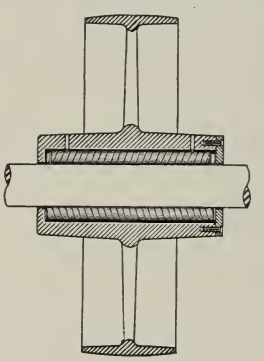
American Wood Working Machinery Co.

C/J.

Loose Pulleys

In General

The table on the following page will indicate the proper diameter of roller for use with various diameters of shaft operating at various speeds. We have patterns for all standard sizes of shaft, with bushings varying in length by quarter inches, in addition to which we have a large list of special patterns. It will be noticed from the table, that as the speed increases the roller also should be increased, in fact it will in all cases be found advantageous to use as large a roller as permissible, for the efficiency of the bearing increases within certain limits with the diameter of the roller. The table also gives the approximate outside



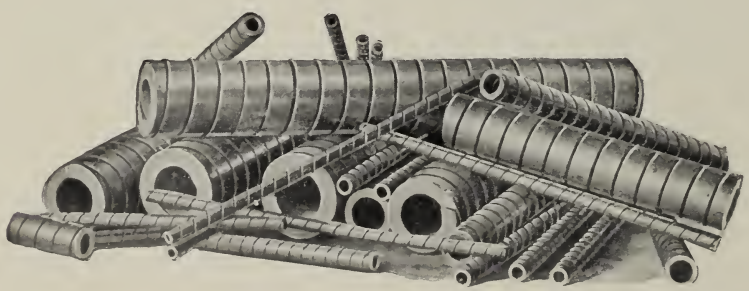
diameters for different combinations of rollers and shafts. These figures, however, are only approximate and are given to enable the pulleys to be cast or previously prepared for the bushings, with the exception of boring. We furnish dimension sheets with every order, giving the net bore of the hub, as these figures vary from time to time according to the thickness of the steel lining. The length of the bushing when specified by us represents the amount of space to be provided, we in all cases allowing sufficient clearance. It will be noted that the table is intended for iron pulleys only. In the case of wood pulleys the bushing will be increased in diameter by the thickness of the cast-iron sleeve, as previously described. We prefer to issue dimension sheets in all instances. It will also be noted that in many instances smaller rollers and consequently smaller bushings are permissible. The table, however, gives the sizes we recommend and we shall be glad to be advised of special requirements, and will give the same prompt attention.

Table of Dimensions

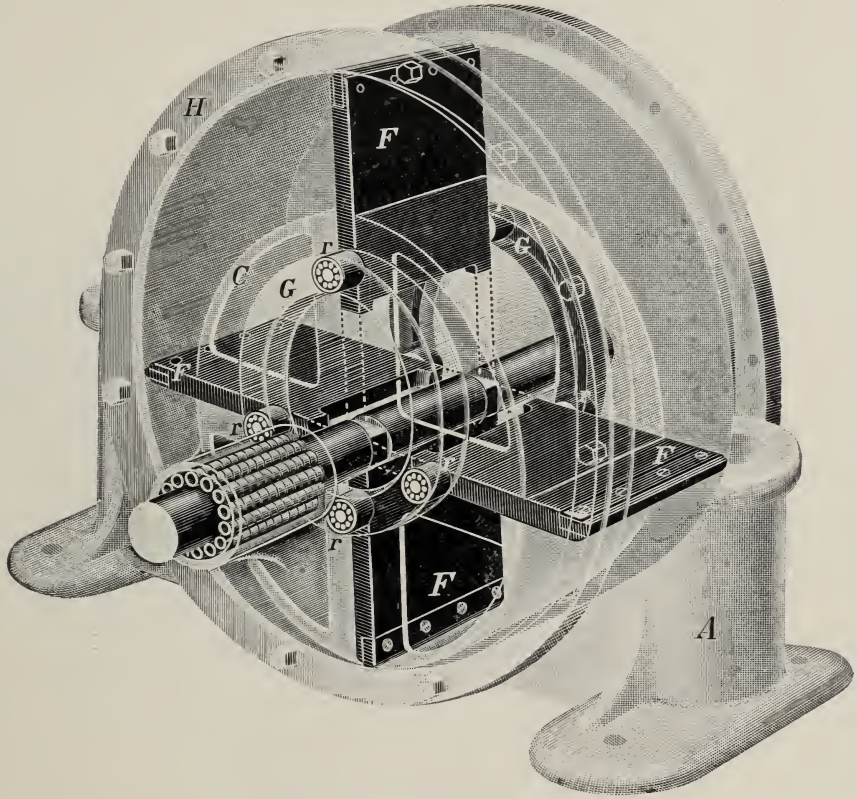
DIAM. OF SHAFT	SPEED IN REVOLUTIONS PER MINUTE.													
	300		600		900		1200		1500		1800		2100	
	DIAM. ROLLER	APP DIAM. BUSHING	DIAM ROLLER	APP DIAM. BUSHING	DIAM. ROLLER	APP DIAM BUSHING	DIAM ROLLER	APP DIAM BUSHING.	DIAM ROLLER	APP DIAM BUSHING.	DIAM. ROLLER	APP DIAM. BUSHING.	DIAM ROLLER	APP DIAM. BUSHING.
1 7/16	7/16	2 7/16	1/2	2 9/16	9/16	2 11/16	5/8	2 13/16	11/16	2 15/16	3/4	3 1/16	13/16	3 3/16
1 1/2	7/16	2 1/2	1/2	2 5/8	9/16	2 3/4	5/8	2 7/8	11/16	3	3/4	3 1/8	13/16	3 1/4
1 11/16	1/2	2 13/16	9/16	2 15/16	5/8	3 1/16	11/16	3 3/16	3/4	3 5/16	13/16	3 7/16	7/8	3 9/16
1 3/4	1/2	2 7/8	9/16	3	5/8	3 1/8	11/16	3 1/4	3/4	3 3/8	13/16	3 1/2	7/8	3 5/8
1 7/8	1/2	3	9/16	3 1/8	5/8	3 1/4	11/16	3 3/8	3/4	3 1/2	13/16	3 5/8	1	4
1 15/16	9/16	3 3/16	5/8	3 5/16	11/16	3 7/16	3/4	3 9/16	7/8	3 13/16	15/16	3 15/16	1	4 1/16
2	9/16	3 1/4	5/8	3 3/8	11/16	3 1/2	3/4	3 5/8	7/8	3 7/8	15/16	4	1	4 1/8
2 1/16	9/16	3 5/16	5/8	3 7/16	11/16	3 9/16	3/4	3 11/16	7/8	3 15/16				
2 1/8	9/16	3 3/8	5/8	3 1/2	11/16	3 5/8	13/16	3 7/8	7/8	4				
2 3/16	9/16	3 7/16	5/8	3 9/16	11/16	3 11/16	13/16	3 15/16	7/8	4 1/16				
2 1/4	9/16	3 1/2	5/8	3 5/8	11/16	3 3/4	13/16	4	7/8	4 1/8				
2 7/16	5/8	3 13/16	11/16	3 15/16	3/4	4 1/16	7/8	4 5/16	1	4 9/16				
2 1/2	5/8	3 7/8	11/16	4	3/4	4 1/8	7/8	4 3/8	1	4 5/8				
2 11/16	5/8	4 1/16	11/16	4 3/16	13/16	4 7/16	7/8	4 9/16						
2 3/4	5/8	4 1/8	11/16	4 1/4	13/16	4 1/2	7/8	4 5/8						
2 7/8	11/16	4 1/2	13/16	4 3/4	7/8	4 7/8	15/16	5						
2 15/16	11/16	4 9/16	13/16	4 13/16	7/8	4 15/16	15/16	5 1/16						
3	3/4	4 3/4	13/16	4 7/8	7/8	5	15/16	5 1/8						
3 3/16	3/4	4 15/16	13/16	5 1/16	15/16	5 5/16								
3 1/4	3/4	5	13/16	5 1/8	15/16	5 3/8								
3 3/8	3/4	5 1/8	13/16	5 1/4	15/16	5 1/2								
3 7/16	3/4	5 3/16	13/16	5 5/16	15/16	5 9/16								
3 1/2	3/4	5 1/4	13/16	5 3/8	15/16	5 5/8								
3 11/16	13/16	5 9/16	7/8	5 11/16										
3 3/4	13/16	5 5/8	7/8	5 3/4										
3 7/8	7/8	5 7/8	1	6 1/8										
3 15/16	7/8	5 15/16	1	6 3/16										
4	7/8	6	1	6 1/4										

High Speed Machinery

Considering the work which we have found the Hyatt type of roller to be performing in the line of heavy duty, it seems almost impossible that the device could also be applicable, and be in such general use on high speed shafting and machinery operating up to several thousand revolutions per minute. Considering, however, the principle upon which this roller is based, we find it is only necessary to provide a roller of a lighter and more flexible character, and we have an article that is particularly adapted to this class of duty. We also find it advisable to increase the diameter of the roller as the speed increases. In other words, we come to the same conclusion as we have reached before, namely, that it is merely a question of properly proportioning the various parts of the roller in order to obtain the most satisfactory and efficient results. Looking at the subject from the commercial standpoint, we find these bearings used to a large extent on high speed pulverizing machines, requiring a considerable amount of power and operating at three and four thousand revolutions per minute. Also on high speed fans and all apparatus of that character in which the bearings are not only making possible a saving in power, which, in itself, returns their entire cost within one year's operation, but are also entirely eliminating the difficulty so frequently experienced with bearings operating under such severe conditions. We find many instances where these bearings have been substituted for others which, although built according to the best practice, have not proved satisfactory.



Hyatt Flexible Rollers.



Standard American Gas Furnace Co. Fan,
Regularly Equipped with Hyatt Roller Bearing.

Automobiles

There is no other single application outside of that applying to shafting, which has shown such enormous increases within the past five years as the use of Hyatt bearings on automobiles. Simultaneously with this issue we publish our bulletin number twenty-six B, which will be found profuse with illustrations showing various parts of the automobile to which Hyatt bearings have been successfully applied. We give on the following page a list of cars which are fitted with Hyatt bearings on rear axles. This list requires, in our humble estimation, no comment.

We have from time to time been called upon to design and furnish bearings for counter shafts, secondary or transmission shafts, engine shafts, gears, etc., and as a result have a large number of drawings, and in many cases patterns of such special bearings. A number of makers have adopted the Hyatt Bearing for their transmission shaft bearings. Such shafts are called upon to carry enormous strain, and in several instances the Hyatt Bearing has been substituted for other anti-friction devices which had been tried but found unsatisfactory.

We invite makers of heavy vehicles to carefully consider the advantages which might be derived from the use of Hyatt Bearings. The serious objections to other forms of roller bearings, namely, their excessive cost, will not apply when considering the Hyatt Bearing for reasons stated in this bulletin. While it may be true that manufacturers of heavy cars as a rule may provide ample power to overcome any ordinary friction, instances are often recorded where such cars are compelled to seek assistance, having insufficient power to overcome the friction caused by hot bearings or bearings out of alignment. It is evident that in such cases anti-friction bearings would be advantageous. This is only one argument in favor of anti-friction bearings against plain bearings. We invite the attention of every manufacturer to the principle upon which the Hyatt Bearing is constructed, and to the results which have been obtained by some of the most successful manufacturers in this country. If such results are compared with the loose opinions which are abroad in many quarters, and which are based merely on hearsay, the adoption of the Hyatt Bearing would be seriously considered by everyone interested.

AUTOMOBILES

More Hyatt Bearings are in use in rear axles, hubs, jack-shafts, and transmissions than any other bearing made.

Below we give the record of

Principal Constant Users of Hyatt Bearings

Season of

1901	1902	1903	1904	1905	1906
Olds	Olds	Olds	Olds	Olds	Olds
Haynes	Hayes	Haynes	Haynes	Haynes	Haynes
	Elmore	Elmore	Elmore	Elmore	Elmore
		Ford	Ford	Ford	Ford
		Cadillac	Cadillac	Cadillac	Cadillac
		Buick	Buick	Buick	Buick
			Autocar	Autocar	Autocar
			Franklin	Franklin	Franklin
			Jackson	Jackson	Jackson
			Moline	Moline	Moline
				Premier	Premier
				Reo	Reo
				Stevens-Duryea	Stevens-Duryea
				Pierce-Racine	Pierce-Racine
				Maxwell-Briscoe	Maxwell-Briscoe
				Blomstrom	Blomstrom
					Bartholemew
					Wayne
					Acme
					Marmon

Four Hundred Prominent Users of the Hyatt Bearing For Power Transmission Purposes

In substantiation of our claim that there is hardly another mechanical device having among its users and endorsers such a large number of prominent manufacturers. We give on the following pages names of about four hundred concerns throughout the country who have equipped their shafting with Hyatt bearings. A great many of the concerns which we enumerate installed complete equipment of Hyatt Bearings a number of years ago and as the results of such equipments, we have recently been favored with large repeat orders.

Many of the concerns will be recognized as leaders or among the leaders in their particular line; the fact they would use only the best material obtainable should convince the prospective customer of the merits of our proposition.

We have demonstrated to the following customers that Hyatt bearings will reduce operating expenses and save trouble. They will insure cool bearings at all speeds and their durability and efficiency are fully guaranteed.

Full particulars regarding Hyatt bearings as applied to line shafting will be found in Bulletin Twenty-two which will be sent upon inquiry.

New York City and Vicinity

Chelsea Jute Mills, Brooklyn, N. Y.
Phoenix Tube Co., Brooklyn, N. Y.
Shadbolt, Mfg. Co., Brooklyn, N. Y.
U. S. Navy Yard, Brooklyn, N. Y.
American Gas Furnace Co., Elizabeth, N. J.
General Electric Co., Harrison, N. J.
Keuffel & Esser Co., Hoboken, N. J.
National Casket Co., Hoboken, N. J.
Ames & Co., Jersey City, N. J.
American Cigar Co., Jersey City, N. J.
Krementz & Co., Newark, N. J.
Atha Tool Co., Newark, N. J.
Duranoid Mfg. Co., Newark, N. J.
Heller Bros., Newark, N. J.
Celluloid Co., Newark, N. J.
The Arlington Co., Newark N. J.
New Jersey Zinc Co., Newark, N. J.
Hartford Rubber Works Co., New Brunswick, N. J.
Fayerweather & Ladew, New York, N. Y.
Garvin Machine Co., New York, N. Y.
Barbour Flax Spinning Co., Paterson, N. J.
American Felt Co., Picton, N. J.
Hibbard-Rodman-Ely Safe Co., Plainfield, N. J.
Rushmore Dynamo Works, Plainfield, N. J.
General Electric Co., Schenectady, N. Y.
Rand Drill Co., Tarrytown, N. Y.

New York State

Albany P. W. P. Co., Albany, N. Y.
Taylor Signal Co., Buffalo, N. Y.
Buffalo Bolt Co., Buffalo, N. Y.
United Hame Co., Buffalo, N. Y.
Bausch & Lomb Optical Co., Rochester, N. Y.
Rome Brass & Copper Co., Rome, N. Y.
J. S. Graham Mach. Co., Rochester, N. Y.

E. R. Thomas Motor Co., Buffalo. N. Y.
Bundy Mfg. Co., Endicott, N. J.
Elmira Knitting Mills, Elmira, N. Y.
Pratt Chuck Co., Frankfort, N. Y.
Horrocks & Metzler Co., Herkimer, N. Y.
Wycoff, Seamans & Benedict, Ilion, N. Y.
Remington Arms Co., Ilion, N. Y.
Art Metal Construction Co., Jamestown, N. Y.
Oneida Community, Ltd., Kenwood, N. Y.
Faatz-Reynolds Felting Co., Lestershire, N. Y.
Delaware & Hudson Railway Co., Oneonta, N. Y.
Lozier Motor Co., Plattsburg, N. Y.
H. H. Franklin Mfg. Co., Syracuse, N. Y.
Shaw Coupling Co., Syracuse. N. Y.
O. M. Edwards Co., Syracuse, N. Y.
Kemp & Burpee Mfg. Co., Syracuse, N. Y.
Syracuse Foundry Co., Syracuse, N. Y.
Brown-Lipe Gear Co., Syracuse, N. Y.
Merrel-Soule Co., Syracuse, N. Y.
Clinton Knitting Co., Syracuse, N. Y.
C. C. Bradley & Son, Syracuse, N. Y.
Central City Engraving Co., Syracuse, N. Y.
Shortsville Wheel Co., Shortsville, N. Y.
American Loco. Co., Schenectady, N. Y.
General Electric Co., Schenectady, N. Y.
Goulds Mfg. Co., Seneca Falls, N. Y.

New England

The S. O. & C. Co., Ansonia, Conn.
United Shoe Machinery Co., Beverly, Mass.
American Can Co., Boston, Mass.
American Tube & Stamping Co., Bridgeport, Conn.
Wallace Barnes Co., Bristol, Conn.
Bullard Machine Co., Bridgeport, Conn.
Union Typewriter Co., Bridgeport, Conn.
J. Stevens Arms & Tool Co., Chicopee Falls, Mass.
The Collins Co., Collinsville, Conn.
The Hampton Co., East Hampton, Mass.
General Electric Co., Lynn, Mass.
The Aeolian Co., Meriden, Conn.
The Stanley Works, New Britain, Conn.
North & Judd Mfg. Co., New Britain, Conn.
Stanley Electric Mfg. Co., Pittsfield, Mass.
Ordinance Depot, Torpedo Station, Newport, R. I.
Beaman & Smith, Providence, R. I.
National Ring Traveler Co., Providence, R. I.
Brown & Sharpe Mfg. Co., Providence, R. I.
Potter & Johnson, Pawtucket, R. I.
Springfield Arsenal, Springfield, Mass.
Springfield Armory, Springfield, Mass.
Fair Haven Food Company, Fair Haven, Mass.
Atlas Tack Co., Fair Haven, Mass.
Automatic Machine Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.
Wells Bros., Greenfield, Mass.
The Goodell Co., Greenfield,Mass.
Farr Alpaca Co., Holyoke, Mass.
Merrick Mills, American Thread Co., Holyoke, Mass.
Coburn Trolley Track Mfg. Co., Holyoke, Mass.
American Optical Co., Southbridge, Mass.
Cheney Bros., South Manchester, Conn.
Hendey Machine Tool Co., Torrington, Conn.
American Brass Co., Waterbury, Conn.
Holmes, Booth & Hayden Co., Waterbury, Conn.
Wm. L. Gilbert Clock Co., Winsted, Conn.
New England Watch Co., Waterbury, Conn.
Westport Paper Co., Westport Conn.
Strong Mfg. Co., Winsted, Conn.
Franklin-Moore Co., Winsted, Conn.
Billings & Spencer Co., Hartford, Conn.
Whitney Mfg. Co., Hartford, Conn.

Philadelphia and Vicinity

Metric Metal Works, Erie, Pa.
New Jersey Zinc Co., Hazard, Pa.
Colburn Machine Tool Co., Philadelphia, Pa.
Eddishaw Bros., Philadelphia, Pa.
Fels & Co., Philadelphia, Pa.
Friedberger Mfg. Co., Philadelphia, Pa.
Robert H. Foerderer, Inc., Philadelphia, Pa.

Pennsylvania Railroad Co., Philadelphia, Pa.
Philadelphia & Reading Railroad Co., Philadelphia, Pa.
North Bros. Mfg. Co., Philadelphia, Pa.
E. C. Penfield & Co., Phialadelphia, Pa.
Stanley G. Flagg & Co., Philadelphia, Pa.
American Agricultural Chemical Co., Philadelphia, Pa.
S. L. Allen & Co., Philadelphia, Pa.
Bement-Miles Works, Philadelphia, Pa.
A. F. Bornot & Brother, Philadelphia, Pa.
H. W. Butterworth & Sons Co., Philadelphia, Pa.
The Cox & Sons Co., Philadelphia, Pa.
Wm. Cramp & Sons Ship & Engine Bldg. Co., Philadelphia, Pa.
Croft & Allen Co., Philadelphia, Pa.
The Enterprise Mfg. Co., Philadelphia, Pa.
Harrison Bros. & Co., Inc., Philadelphia, Pa.
Thomas Halton's Sons, Philadelphia, Pa.
Hoopes & Townsend Co., Philadelphia, Pa.
Krout & Fite Mfg. Co., Philadelphia, Pa.
The Moore & White Co., Philadelphia, Pa.
Niles-Bement-Pond Co., Crane Dept., Philadelphia, Pa.
Pennsylvania Steel Co., Philadelphia, Pa.
Philadelphia Rapid Transit Co., Philadelphia, Pa.
Henry H. Roelofs & Co., Philadelphia, Pa.
Reading Iron Co., Philadelphia, Pa.
Schofield, Mason & Co., Philadelphia, Pa.
Sharpless Separator Co., Philadelphia, Pa.
U. S. Arsenal, Frankford, Philadelphia, Pa.
American & Magnesia Mfg. Co., Plymouth Meeting, Pa.
Philadelphia Forge Co., Tacony, Pa.

Cincinnati and Vicinity

Ault & Wiborg Co., Cincinnati, O.
American Laundry Machinery Co., Cincinnati, O.
The Charles Boldt Glass Co., Cincinnati, O.
Cincinnati Milling Machine Co., Cincinati, Ohio.
Cincinnati Shaper Co., Cincinnati, O.
Eagle White Lead Co., Cincinnati, O.
J. A. Fay & Eagan Co., Cincinnati, O.
R. K. LeBlond Machine Tool Co., Cincinnati, O.
Lodge & Shipley Machine Tool Co., Cincinnati, O.
Lunkenheimer Co., Cincinnati, O.
William Powell Co., Cincinnati, O.
Smith & Mills, Cincinnati, O.
Stearns & Foster, Cincinnati, O.
Watkins Laundry Machinery Co., Cincinnati, O.
American Tool Works Co., Cincinnati, O.
Narsh Hame Mfg. Co., Cincinnati, O.
Pittsburg Plate Glass Co., Cincinnati, O.
Columbus Bolt Works Co., Columbus, O.
Jeffrey Mfg. Co., Columbus, O.
Davis Sewing Machine Co., Dayton, O.
Dayton Malleable Iron Co., Dayton, O.
Mead Paper Co., Dayton, O.
National Cash Register Co., Dayton, O.
Aakin Erskine Milling Co., Evansville, Ind.
Bartlett, Kuhn & Co., Evansville, Ind.
Schnute Holtman & Co., Evansville, Ind.
Black & Clawson Co., Hamilton, O.
Champion Coated Paper Co., Hamilton, O.
Niles Tool Works Co., Hamilton, O.
Central Machine Co., Indianapolis, Ind.
Parry Mfg. Co., Indianapolis, Ind.
Kentucky Tobacco Product Co., Louisville, Kentucky.
Kauffman Buggy Co., Miamisburg, O.
Todd Mfg. Co., Nw Albany, Ind.
Robinson & Co., Richmond, Ind.
Foos Mfg. Co., Springfield, O.
Springfield Metallic Casket Co., Springfield, O.
Star Shovel & Range Co., Vincennes, Ind.
Peck Williamston Fdy. Co., Wellston, O.

Cleveland and Vicinity

Transue & Williams Co., Alliance, O.
Novelty Stamping Co., Bellaire, O.
Kuhlman Car Co., Cleveland, O.
Lake Shore & Michigan & Southern Railway, Cleveland, O.
Cleveland Frog & Crossing Co., Cleveland, Ohio.

Cleveland Laundry Co., Cleveland, O.
Cleveland Machine & Mfg. Co., Cleveland, Ohio.
Cleveland Provision Co., Cleveland, O.
Cleveland Punch & Shear Co., Cleveland, O.
Dangler Stove Co., Cleveland, O.
De Mooy Bros., Cleveland, O.
Fisher & Wilson Lumber Co., Cleveland, O.
Foote, Burt & Co., Cleveland, O.
Frost Wire Fence Co., Cleveland, O.
Horsburg Forging Co., Cleveland, O.
Ohio Cultivator Co., Bellevue, O.
Cleveland Pneumatic Tool Co., Cleveland, Ohio.
North Electric Co., Cleveland, O.
Acme Machinery Co., Cleveland, O.
American Ball Bearing Co., Cleveland, O.
American Miltigraph Co., Cleveland, O.
Baker Motor Vehicle Co., Cleveland, O.
Beckman & Co., Cleveland, O.
Bishop & Babcock, Cleveland, O.
Chicago Pneumatic Tool Co., Cleveland, O.
Cleveland Cap Screw Co., Cleveland, O.
United Knitting Co., Cleveland, O.
Upson Nut Co., Cleveland, O.
Variety Iron Works, Cleveland, O.
Wayman & Gordon, Cleveland, O.
Lima Locomotive & Machine Co., Lima, O.
The Brown-Cochran Co., Lorain, O.
A. J. Root Co., Medina, O.
Niles Car & Mfg. Co., Niles, O.
American Clay Working Co., Willoughby, Ohio.
Ohio Oilcloth Co., Youngstown, O.
Youngstown Engineering Co., Youngstown, Ohio.
Long Arm System Co., Cleveland, O.
Morreau Gas Fixture Co., Cleveland, O.
Nicola Lumber Co., Cleveland, O.
Ohio Baking Co., Cleveland, O.
Oster Mfg. Co., Cleveland, O.
Raymond Co. F. L., Cleveland, O.
Rich & Co., Cleveland, O.
Standard Knitting Co., Cleveland, O.
Standard Sewing Machine Co., Cleveland, Ohio.
Standard Welding Co., Cleveland, O.

State of Michigan

Adrian Wire Fence Co., Adrian, Mich.
Lamb Wire Fence Co., Adrian, Mich.
Compensating Pipe Organ Co., Battle Creek, Mich.
American Steam Pump Co., Battle Creek, Mich.
Union Steam Pump Co., Battle Creek, Mich.
Korn-Krisp Co., Battle Creek, Mich.
Burt Portland Cement Co., Bellevue, Mich.
Smalley Motor Co., Bay City, Mich.
Cheboygan Paper Co., Cheboygan, Mich.
Penberthy Injector Co., Detroit, Mich.
Art Stove Co., Detroit, Mich.
American Harrow Co., Detroit, Mich.
Banner Laundry Co., Detroit, Mich.
Cadillac Motor Car Co., Detroit, Mich.
Detroit Lubricator Co., Detroit, Mich.
Detroit Screw Works, Detroit, Mich.
Diamond Match Co., Detroit, Mich.
Detroit Show Case Co., Detroit, Mich.
Detroit Copper & Brass Rolling Mills, Detroit, Mich.
Edison Illuminating Co., Detroit, Mich.
Parke, Davis & Co., Detroit, Mich.
Buhl Malleable Co., Detroit, Mich.
Solvay Process Co., Detroit, Mich.
Stimpson Standard Scale Co., Detroit, Mich.
Ford Motor Co., Detroit, Mich.
Detroit Steel Castings Co., Detroit, Mich.
Ireland & Matthews Mfg. Co., Detroit, Mich.
Murphy Chair Co., Detroit, Mich.
Imperial Wheel Co., Flint, Mich.
Fox Machine Co., Grand Rapids, Mich.
Baldwin, Tuthill & Bolton, Grand Rapids, Mich.
Hastings Wool Boot Co., Hastings, Mich.
Barber Bros. Chair Co., Hastings, Mich.
Huron Milling Co., Harbor Beach, Mich.
Ames Dean Carriage Co., Jackson, Mich.
Jackson Cushion Spring Co., Jackson, Mich.
Kalamazoo Stove Co., Kalamazoo, Mich.
Olds Gas Engine Co., Lansing, Mich.
Lansing Wheelbarrow Co., Lansing, Mich.
Cooper, Wells & Co., St. Joseph, Mich.
Royal Chair Co., Sturgis, Mich.
J. E. Greilick & Co., Traverse City, Mich.

Lloyd Construction Co., Detroit, Mich.
Michigan Bolt & Nut Works, Detroit, Mich.
Michigan Alkali Co., Detroit, Mich.
Traverse City Iron Works, Traverse City, Mich.

Chicago and Vicinity

American Well Works, Aurora, Ill.
National Sewing Machine Co., Belvidere, Illinois.
Armstrong Bros. Tool Co., Chicago, Ill.
Raymond Bros. Impact Pulverizer Co., Chicago, Ill.
Quaker Mfg. Co., Chicago Heights, Ill.
Elgin Butter Tub Co., Elgin, Ill.
Illinois Watch Case Co., Elgin, Ill.
Elgin National Watch Co., Elgin, Ill.
Joliet Mfg. Co., Joliet, Ill.
Rock River Cotton Co., Janesville, Wis.
Charles A. Fisher & Co., Lincoln, Ill.
Moline Plow Co., Moline, Ill.
Moline Tool Co., Moline, Ill.
Mutual Wheel Co., Moline, Ill.
Roach & Musser Sash & Door Co., Muscatine, Iowa.
Sternberg Mfg. Co., Milwaukee, Wis.
Western Cottage Piano & Organ Co., Ottawa, Ill.
Kingman Plow Co., Peoria, Ill.
Peru Plow & Wheel Co., Peru, Ill.
Albert Dickenson Co., Chicago, Ill.
Pacific Coast Borax Co., Chicago, Ill.
J. W. Reedy Elevator Mfg. Co., Chicago, Illinois.
Wm. E. Pratt Mfg. Co., Chicago, Ill.
Hardinge Bros., Chicago, Ill.
Pettibone Mulliken Co., Chicago, Ill.
Quincy Engine Co., Quincy, Ill.
Rock Island Stove Co., Rock Island, Ill.
Standard Oil Cloth Co., Rock Island, Ill.
Rock Island Plow Co., Rock Island, Ill.
Illinois Sewing Machine Co., Rock Island, Illinios.
Rock Island Sash & Door Works, Rock Island, Ill.
Ingersoll Milling Machine Co., Rockford, Illinois.
Greenlee Bros. & Co., Rockford, Ill.
Barber-Colman Co., Rockford, Ill.
Rockford Standard Furniture Co., Rockford, Il.
Creamery Package Mfg. Co., Waterloo, Ia.
United States Envelope Co., Waukegan, Ill.

St. Louis

St. Louis Car Co., St. Louis, Mo.
Century Electric Co., St. Louis, Mo.
Friedman Bros. Shoe Co., St. Louis, Mo.
Universal Adding Machine Co., St. Louis, Missouri.
Smith Davis Mfg. Co., St. Louis, Mo.
G. H. Diederick Furniture Co., St. Louis, Missouri.
Meier & Pohlman Furniture Co., St. Louis, Missouri.
Yerkes & Finan Wood Working Machine Co., St. Louis, Mo.
Hall & Brown Wood Working Machine Co., St. Louis, Mo.
Bowman Stamping Co., St. Louis, Mo.
Charles A. Olcott Planing Mill Co. St. Louis, Mo.
Wagner Electric Co., St. Louis, Mo.
American Car & Fdy. Co., St. Louis,, Mo.
Ludlow-Saylor Wire Co., St. Louis, Mo.
St. Louis Transit Co., St. Louis, Mo.
Curtis & Co. Mfg. Co., St. Louis, Mo.
Helmbacher Forge & Rolling Mills Co., St. Louis, Mo.
St. Louis Coffin Co., St. Louis, Mo.
Charles Thuener Planing Mills, St. Louis, Missouri.

Southern States

Kentucky Tobacco Product Co., Louisville, Kentucky.
Struck & Co. Louisville, Ky.
Mengel Bros. & Co., Louisville, Ky.

National Casket Co., Louisville, Ky.
Southern Cotton Oil Co., Memphis, Tenn.
Southern Cotton Oil Co., Greensboro, S. C.
Apalachee Mills, Arlington, S. C.
H. C. Townsend, Anderson, S. C.
Thistle Mills, Ilchester, Md.
Maryland Biscuit Co., Baltimore, Md.
Baltimore Boot & Shoe Co., Baltimore, Md
National Enameling & Stamping Co., Baltimore, Md.
Detrick & Harvey Machine Co., Baltimore, Maryland.
Columbia Paper Bag Co., Baltimore, Md.
Patterson Textile Mills, Roanoke Rapids, N. C.
Roanoke Mills Co., Roanoke Rapids, N. C.
Weldon Cotton Manufacturing Co., Weldon, N. C.
Leak, Wall & McRae, Rockingham, N. C.
Leaksville Cotton Mill, Spray, N. C.
Mooresville Cotton Mills, Mooresville, N. C.
D. A. Tompkins Co., Charlotte, N. C.
National Compositype Co., Baltimore, Md.
L. Hilgartner & Son, Baltimore, Md.
Mt. Clare Shops, B. & O. R. R. Co., Mt. Clare, Md.
Naval Gun Factory, Washington, D. C.
District of Columbia Paper Mfg. Co., Washington, D. C.
Manual Training School, Washington, D. C.
Marshall Bros., Yorklyn, Del.
Delaware Hard Fibre Co., Wilmington, Del.
Rosemary Mfg. Co., Roanoke Rapids, N. C.
Roanoke Navigation & Water Power Co., Roanoke Rapids, N. C.
Joseph A. Parker, Portsmouth, Va.
Crawford Woolen Mills, Martinsburg, W. Va.
Columbus Iron Works Co., Columbus, Ga.
Riverside Mills, Augusta, Ga.
De Loach Mill Mfg. Co., Atlanta, Ga.
Madison Oil Co., Madison, Ga.
Ashland Mfg. Co., Dickeyville, Md.

Portland and Vicinity

Multnomah Trunk & Box Factory, Portland, Ore.
Crescent Mills, Portland, Ore.
Peerless Pure Food Co., Portland, Ore.
Columbia Engineering Works, Portland, Oregon.
Williamette Boiler Works, Portland, Ore.
Gill Gas Engine & Machine Co., Portland, Oregon.
Pacific Coast Biscuit Co., Portland, Ore.
Modern Mfg. Co., Portland, Ore.
Portland Spring Bed & Mattress Co., Portland, Ore.
Portland Lumber Co., Portland, Ore.
Peters & Roberts Furniture Co., Portland, Oregon.
Oregon Planing Mills, Portland, Ore.
Rierson Machinery Co., Portland, Ore.
Narby & Wilson, Chehalis, Wash.
Nickerson Machinery Co., Tacoma, Wash.
McMinnville Planing Mills, McMinnville, Oregon.
Hood River Milling Co., Hood River, Ore.
Beaverton Milling Co., Beaverton, Ore.
Albers Bros., Tacoma, Wash.
Union Meat Co., Portland, Ore.
G. P. Sharkey & Son, Portland, Ore.
U. S. Government, Geological Station, Portland, Ore.
Tory Printing Co., Portland, Ore.
U. S. Laundry, Portland, Ore.
Ainsley Lumber Co., Portland, Ore.
Columbia Gas Engine Co., Portland, Ore.
Woodard & Clark, Portland, Ore.
Oregon Sash & Door Co., Portland, Ore.
Wilson Norby Lumber Co, Portland, Ore.
Home Gas Plant Co., Portland, Ore.
Portland Machinery Co., Portland, Ore.

CATALOGUES AND PAMPHLETS

We publish a number of catalogues and pamphlets illustrating the application of the Hyatt Roller Bearing to all classes of work. We should be glad to send copies of any or all to those interested.

Bulletin No. 20, describes the construction of the Hyatt Roller Bearing, its advantages as compared with others, and illustrates its application to those cases involving heavy loads at slow speeds, such as Traveling Cranes, Shop Trucks, Core Oven Cars, Tumbling Barrels, Pulverizing Machinery and work of that description.

Bulletin No. 22, illustrates the application to Power Transmission and includes a complete description of the Hyatt Roller Bearing, its advantages as compared with others, and what results may be obtained by its use. Price lists are given covering Drop Hangers, Post Hangers, Pillow Blocks, etc.

Bulletin No. 23, contains a report made by the Committee of Science and Arts of the Franklin Institute of Philadelphia, being the results of a series of tests on the Hyatt Flexible Roller as compared with the Solid Steel Roller. This report also includes the conclusion of the Committee, not only as to the efficiency, but the practicability and durability of the Hyatt Flexible Roller.

Bulletin No. 24, describes the construction of the Hyatt Roller Bearing, its advantages as compared with others, and illustrates its application to the Loose Pulley. A table is included from which the dimensions of Hyatt Roller Bushing may be determined, knowing the speed at which they are to operate. Letters are reproduced showing the results that have been obtained.

Bulletin No. 26 B, describes the construction of the Hyatt Roller Bearing, its advantages as compared with others and its *application to Automobile work* of every description. The various methods of application are fully described and illustrated. Letters are reproduced showing the results that have been obtained.

Bulletin No. 27, describes the results obtained with the Hyatt Roller Bearings from the standpoint of the user, being reproductions of letters from customers, giving their experience with this bearing as applied to the mechanical transmission of power.

Bulletin No. 28, contains a full description of the principal mechanical advantages of the Hyatt Bearing and some information covering commercial applications.

Bulletin No. 115, describes the application of the Hyatt Roller Bearings to Mine Car Wheels.

Bulletin No. 116, shows results of electrical test made by the American Can Company as to efficiency of Hyatt Shafting Bearings.

Bulletin No. 117, describes Standard Car Bearings and shows all dimensions and prices of same.

Bulletin No. 118, is a reprint of exhaustive test made by Pratt Institute showing relative efficiency of Hyatt Bearings, Bronze and Babbitt.

Bulletin No. 123, "With a good ammunition and a dead sure aim you can always count on a bag full of game." Showing by reproduced records from our Sales Department how we "make good."

Bulletin No. 124, "Why not let us do likewise to your friction," setting forth our shafting proposition in a condensed manner.

Bulletin No. 125, "Actions speak louder than words"—showing the endorsement of the Hyatt Bearings by the largest watch mannfacturing concern in the country.

The Hyatt Bearing

A RESUME OF ITS

Advantages and Applications

Hyatt Roller Bearing Company

Harrison, New Jersey

BULLETIN TWENTY-EIGHT JANUARY TENTH, NINETEEN-SIX